# Staff Report: Initial Statement of Reasons for the Proposed Airborne Toxic Control Measure for Emissions of Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Activities

## Fact Sheet

The Air Resources Board (ARB or Board) is proposing an airborne toxic control measure (ATCM) that would require manufacturers of automotive consumer products to remove the following chlorinated toxic air contaminants (TACs) from their products: perchloroethylene (Perc), methylene chloride (MeCl), and trichloroethylene (TCE).

1. Why did we assess the use of chlorinated compounds in automotive consumer products?

At the November 21, 1996, public hearing, the ARB adopted amendments to exempt Perc from the volatile organic compound (VOC) definition in California's Regulation for Reducing VOC Emissions from Consumer Products (Consumer Products Regulation, Title 17, California Code of Regulations, sections 94507-94517). This action allowed manufacturers to reformulate consumer products with Perc to meet the VOC limits of the Consumer Products Regulation. During the hearing, the Board expressed concerns about the potential increase in Perc use in consumer products, and the possible health impacts that might result. Therefore, the Board directed the ARB staff to conduct an assessment under the State toxic air contaminant program of the need to control Perc use in consumer products.

We initially focused on the use of Perc in brake cleaning products because this product category represented the greatest use of Perc among consumer products. The assessment was later expanded to address the use of MeCl and TCE in brake cleaning products, and the use of all three compounds in carburetor cleaner, engine degreaser, and general purpose degreaser. This expansion reflected the fact that: (1) brake cleaning products could potentially be reformulated with MeCl or TCE, and (2) products in the other three product categories were observed being used interchangeably with brake cleaning products during the assessment.

2. What efforts were made to involve industry and the public?

Our outreach efforts include four public workshops, three presentations, seven meetings with the work group, over 500 phone calls, and 158 site visits. We also established a work group that included product manufacturers, their associations, automotive maintenance and repair (AMR) facility operators, their associations, waste water treatment agencies, district representatives, and groups interested in decreasing the use of chlorinated compounds. The work group assisted in the development of the manufacturer and automotive repair facility surveys and a site visit questionnaire, commented on staff analysis of the two surveys, and conducted their own analysis of potential biases in the facility survey. Work group members also had a consultant review our air dispersion modeling methodology and results, and suggested possible options for limiting public exposure.

3. What methods were used to collect information?

We surveyed manufacturers to gather sales and formulation data for both Perc and non-Perc brake cleaning products. We also surveyed facility operators to gather information on the number of facilities performing brake repair operations, the number of brake jobs performed, and the type and quantity of bulk liquid and aerosol products used. Additionally, we conducted site visits to 158 facilities. At these facilities, we gathered information on product usage and the tendency for facility operators to use products from the four product categories interchangeably. We also gathered process information, such as the number of brake jobs performed per week and the amount and types of solvent used in the process to estimate facility emissions. Finally, we gathered source characteristic information such as building dimensions, hours of operation, and the location of the nearest receptor, to assess the potential risk from a given facility.

4. How much Perc is used in brake cleaning products?

Manufacturer survey respondents reported that the brake cleaning products they sold in California in 1996 contained over 2.4 million pounds of Perc. Based on previous surveys, we believe that brake cleaning product sales reported by the 22 survey respondents represent approximately 90 percent of total 1996 brake cleaning product sales in California. Extrapolating for the remaining 10 percent of sales brings Perc use in brake cleaning products sold in California up to almost 2.7 million pounds per year. Subsequent analysis of 1996 to 1998 manufacturer data collected under the reporting requirements of the Consumer Products Regulation indicate that sales are likely to be about 2.9 million pounds. Sales information from the manufacturer survey and discussions with manufacturers in the work group indicate that about 10 percent of Perc brake cleaning product sales is for use in residential applications.

5. How much Perc is used in AMR facilities?

We conducted a survey of 25,000 AMR facilities in California that potentially could conduct brake repair operations. An analysis of 6800 complete responses indicates that the industry may use slightly more than 1.9 million pounds of Perc per year. The analysis employed some conservative assumptions to address the potential for each survey bias to be under-reported.

6. What portion of the product contents used in AMR activities is emitted?

Observations made during site visits indicate that automotive consumer products used in AMR facilities are generally not collected in such a way as to promote proper disposal or recycling. As such, we believe that 100 percent of industrial and residential usage of automotive consumer products may evaporate and be emitted to the atmosphere.

7. What methodology was used to estimate the risk posed by AMR facilities?

For modeling purposes, we identified five different categories of facilities: dedicated brake shops, service stations, fleets, car dealerships, and general automotive repair facilities. Using facility emission estimates from the site visits, we calculated ground-level concentrations

using the United States Environmental Protection Agency's (U.S. EPA) SCREEN3 screening air dispersion model. This model is recommended for use in screening risk assessments in the California Air Pollution Control Officers Association (CAPCOA) Risk Assessment Guidelines. Then, a representative sampling of facilities (five facility categories and ten meteorological data sets within the State) with high screening risk were modeled again using U.S. EPA's ISCST3 refined air dispersion model. For both the SCREEN3 and ISCST3 modeling runs, we estimated potential health impacts by multiplying the modeled concentration by the pollutant-specific health values adopted by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) as specified in either the CAPCOA or OEHHA Risk Assessment Guidelines.

8. What are the potential near-source impacts at automotive repair facilities?

We modeled Perc brake cleaner risk at 41 facilities using the SCREEN3 air dispersion model. Potential cancer risk in the screening runs were as high as 50 chances in a million at the near-source location, where the near source location is defined as a minimum modeled distance of 20 meters from the center of the facility. Additionally, 20 of 41 facilities exceeded a 10 chances in a million risk. The 10 chances in a million risk level is the level at which many air pollution control and air quality management districts require facilities to conduct public notification.

We also performed refined modeling for Perc brake cleaner risk at 13 facilities using the ISCST3 air dispersion model. These 13 facilities were representative of the facility categories identified above and statewide meteorology, and posed high screening risks. Refined risks were as high as 60 chances in a million at the near-source location, with 10 of the 13 facilities exceeding a 10 chances in a million risk level.

Modeling performed for brake cleaners formulated to contain MeCl or TCE, and carburetor cleaners, engine degreasers, and general purpose degreasers formulated to contain Perc, MeCl, or TCE indicate that these products would also pose potential health impacts.

Potential non-cancer acute and chronic hazard indices were both less than one. For non-cancer impacts, hazard indices greater than one are considered for public notification.

9. What options did we consider for limiting public exposure?

We first considered process controls for AMR facilities - in this case, standardized workplace practices. Industry representatives provided us information indicating that some of the Perc sprayed on brake assemblies could be recovered using these practices. Specific process control practices included: (1) limiting the amount of product sprayed; (2) collecting Perc spray runoff in a reservoir that could be covered when not in use to reduce emissions; and (3) disposal of collected Perc using a hazardous waste collector.

We then considered three product controls - a content limit, a phase out, and a take out - that focus on limiting Perc content and encourage the use of alternative products. Issues we assessed associated with these three options included determining: (1) the Perc content below

which products would not pose a significant risk; (2) potential increases in VOC emissions and flammability risk as a result of product reformulation to reduce Perc content; (3) product effectiveness; and (4) the potential for reformulation with MeCl and/or TCE.

10. What option are we proposing?

We believe that removing chlorinated TACs from automotive consumer products is the best control option. We rejected the option of process controls because it: (1) still allows many facilities to pose a significant risk, (2) poses a significant financial burden on both automotive repair facilities and districts, (3) would be very difficult to enforce, and (4) does not address residential or other uses. As for product controls, we rejected the idea of limiting, but not eliminating, chlorinated compound content because this would not be sufficient to meet the State legal requirement to use best available control technology (BACT). Adhering to BACT would require the removal of chlorinated compounds as long as non-chlorinated automotive consumer products are available and suitable. Our assessment determined that this is the case because non-chlorinated automotive consumer products are available and suitable. The remaining options (to phase out or take out chlorinated products) are similar. However, the take out option requires fewer reformulations by manufacturers and provides greater emissions and risk reductions, and is therefore the preferred option.

11. How would the proposed ATCM impact product manufacturers and facility operators?

The proposed ATCM would require that any aerosol or liquid brake cleaner, carburetor cleaner, engine degreaser, or general purpose degreaser manufactured for sale in California after December 31, 2002 not contain Perc, MeCl, or TCE. Manufacturers would be provided an additional sell-through period of 18 months for chlorinated products manufactured prior to this date. We expect impact on manufacturers to be minimal because almost all manufacturers produce some non-chlorinated products. We expect sales of non-chlorinated products will increase to offset the loss of sales of chlorinated products.

Facility owners and operators would be provided an additional year from the end of the sell-through period (June 30, 2004) to deplete their inventories of chlorinated products manufactured on or before December 31, 2002. The proposed ATCM would then prohibit facility owners and operators from using chlorinated automotive consumer products in their facilities after June 30, 2005. We expect impact on facility owners and operators will also be minimal because the majority of products are already non-chlorinated. We believe that non-chlorinated products are as effective as chlorinated products, and are generally no more expensive.

12. What remains to be done?

We will take our recommendation for a proposed ATCM to the Board on April 27, 2000.